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Mycological Bulletin

(Nos. 13 to 24.)

VOLUME II

1904

W. A. KELLERMAN, Ph. D.

Ohio State University

Columbus, Ohio:
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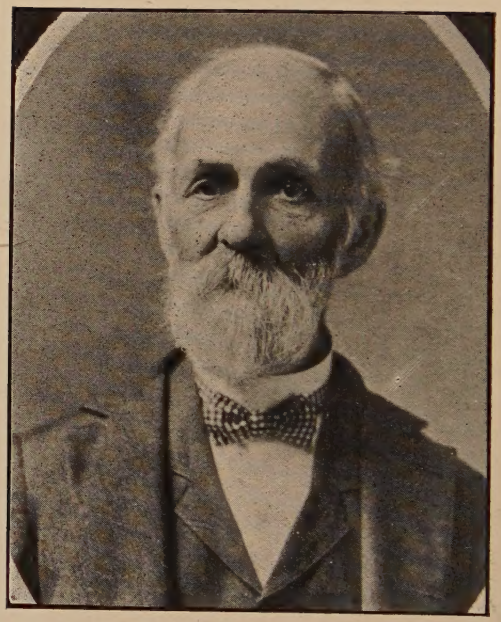


J. B. ELLIS, Newfield, New Jersey,
An Eminent Mycologist.

Mycological Bulletin No. 13

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, February 27, 1904

THANKS ARE EXTENDED—to all who expressed their interest by joining the Club last year and who are still with us, also to the new members, and may their tribe increase! You may also enjoy this pleasant excerpt from an interesting letter by Professor Peck, our leader in American Mycology.

"In renewing my subscription to the Mycological Bulletin, I wish to congratulate you on the manifest success that has attended your efforts in this direction. To one who can remember the time when there were scarcely a half dozen men in this country interested in Mycology, your list of 765 subscribers to your interesting and useful little publication shows that the world does move"

Fig. 48. CLA-VA-RI-A PYX-I-DA-TA. CORAL FUN-GUS. Edible. Of a dull or dirty white color, rather firm texture, growing from rotten wood in shady grove. Photo of specimen collected at Columbus, Ohio.

University Bulletin, Series 8, No. 9. Entered as Second Class Matter, Post-office at Columbus, O.

Drop Ohio.—The membership of the Club, confined originally to the people in the Ohio State University and in Ohio, has (I am glad to say) grown so as to include a much wider area; therefore we may cast off the territorial restriction and henceforth call our Leaflet the Mycological Bulletin.

Of Course—It is yet too cold to go out to get the Mushrooms, but it is not too early to plan the expeditions, and to get ready for the work as soon as warm weather is assured. Could not many young people make an effort this year to sketch and paint some of the showy Mushrooms—perhaps make a record of their characters, such as size, shapes, colors, odor, structure It is impossible to dry the fleshy fun-gi in any way so as to retain their life-like colors and shape, hence the necessity of resorting to the pencil and brush—but think of the pleasure!

It May Be—Well perhaps to state again at the very beginning of the Second Volume that the Mycological Bulletin is not at all designed for advanced botanists, and professional mycologists, though their interest and assistance is highly appreciated—at the same time some of the paragraphs may, I fear, seem difficult to beginners and young people. At any rate all can enjoy the illustrations of our common fun-gi published on these pages. In fact, to send these out plainly labeled and with simple explanations, is the main purpose of the enterprise. Here I may add (as if in parenthesis) that 24 persons have our thanks for contributions beyond the 10-cent fee.

Too Technical.—Several persons have made inquiry relative to the "Journal of Mycology." This we send only to specialists and students, since mainly technical matter is included in the magazine. However, some popular articles are published, and extended readable notes from mycological literature are given in the six Numbers issued during the year; but the price of the Journal is $2.00 per annum.

Acknowledgements.—The photo of interesting little Ág-a-rics shown in Fig. 49 was taken by Rev. W. Leon Dawson, our Ohio ornithologist, who it seems has also an eye for the beautiful in Mushrooms. Supt. M. E. Hard is a veteran in our line—for his taste see Fig. 50. Appreciation of their assistance can be expressed in no better way than by requesting them to continue their contributions! It is hoped that many persons who use the camera will send prints during the season. Notes as to the Mushrooms in any locality will also be most welcome. For such favors thanks are extended in advance.

Coral Fungi.—These peculiar Mushrooms, a sample shown on the preceding page, form a large family which the botanists call *Cla-va-ri-á-ce-ae* which means: plants *Cla-vá-ri-a* like. *Clavária* (the name of the principal genus) was given in reference to their usual club-shape—the Latin word *Clá-va* meaning club. They are all upright plants, some of them simple and club-shaped, but others more or less forked. Sometimes there is a great mass of branches as shown in Fig. 48. They grow in shady woods attached to decaying sticks or on rotten logs. They present a striking appearance—some of them being white, others brownish, yellow, red, or red-tipped. Nearly all of the species are to be included in the edible list. A few are viscid and jelly like—horny when dry.

An Important Subject —In the next No. of the Bulletin some account will be given of the genus Am-a-ní-ta, which includes the Death Cup, the Fly Ág-a-ric, and several other poisonous Mushrooms. If we thoroughly learn the different kinds, we would have no opportunity—certainly no excuse—for eating any but the numerous wholesome species.

THE LIST OF MEMBERS FOR 1904 WILL BE GIVEN IN THE NEXT AND SUCCEEDING NUMBERS.

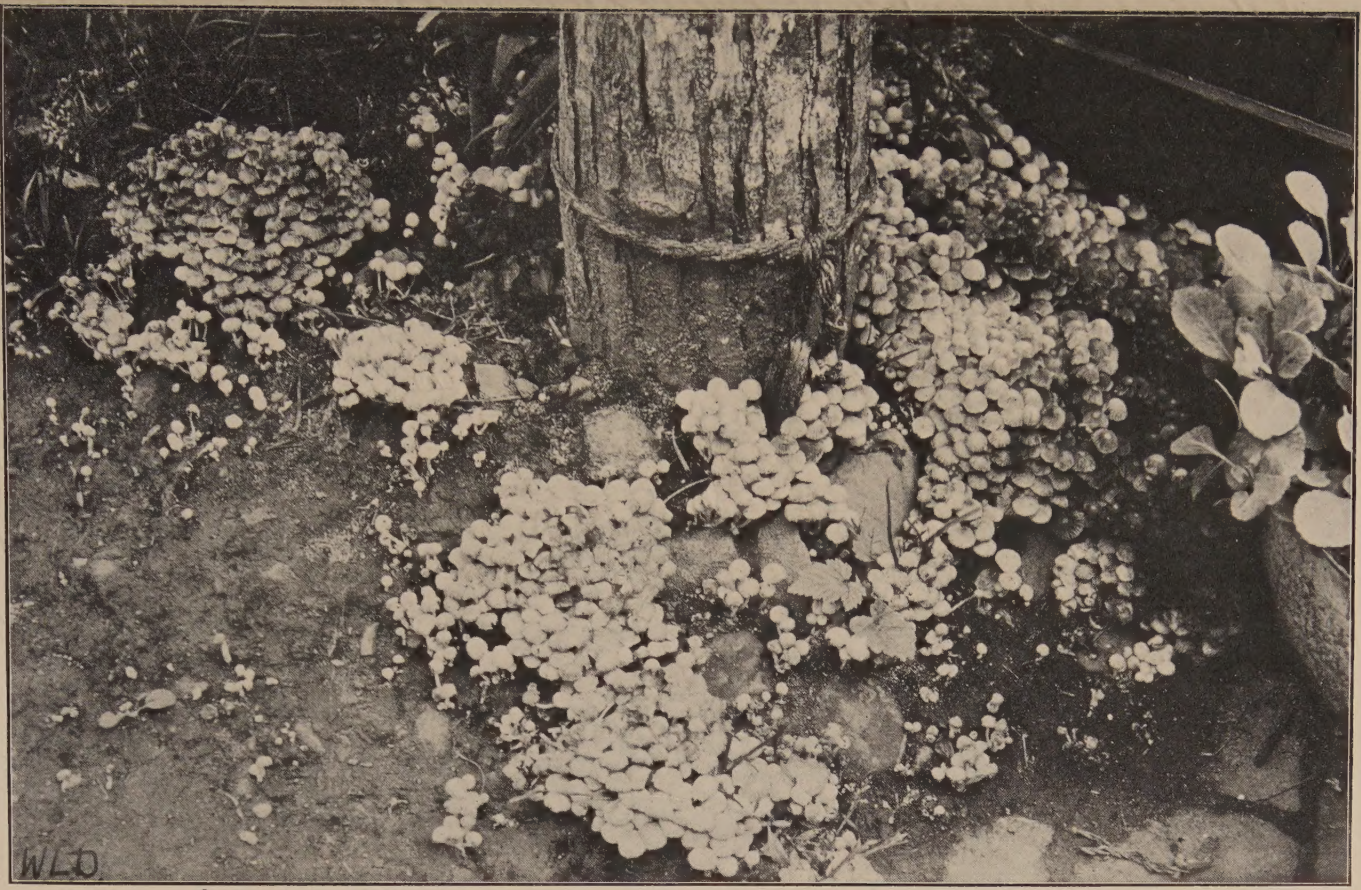


Fig. 49. Psath y rel la dis sem i na ta ~~Co-PRI-NUS MICACEUS. GLISTENING Co-PRI-NUS.~~ Edible. Common and abundant. From photo by Rev. W. Leon Dawson; taken at Sugar Grove, Ohio.

Fig. 50. Co-pri-nus at-ra-men-ta-ri-us. Ink-cap. Edible. To be found during the growing season after heavy rains, but perhaps more abundant in the early autumn. It grows in manured or rich soil, mostly scattered, but sometimes in clusters. The specific name given by the botanists is a Latin word meaning *inky*—alluding of course to the character possessed by all the species of Co-pri-nus, namely, that the moist gills at maturity dissolve into an inky fluid. The spores are black—hence the color of the gills; these are white at first but change gradually to black as the spores ripen. Notice the deliquescent (dissolving) cup in the specimen to the right above the sectioned plant. The cut was made from a photo by Supt. M. E. Hard, Chillicothe, Ohio

The Mycological Bulletin is issued from time to time and sent to all members of the Mycological Club. All eligible to membership who are interested in Nature or the Bulletin. Fee, 10 cents. A few copies of Vol. I remain; price 50 cents each.

Mycological Bulletin No. 14

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, March 26, 1904

NOTE.—Requests for bound copies of the MYCOLOGICAL BULLETIN, Vol. I, have been complied with, and a very few copies may be obtained at an advance of 25 cents in price, namely, 75 cents a copy.

TWO OBJECTS.—This No. of the Bulletin is designed to introduce the genus of Mushrooms called AM-A-NÍ-TA, which unfortunately contains *poisonous* species; and at the same time to renew the notice relative to Atkinson's book on "MUSHROOMS EDIBLE AND POISONOUS," which I regard as the best work for every body to use.

PORTRAIT.—The portrait of Professor Geo. F. Atkinson (with autograph) is presented on the second page, and at the same time acknowledgement is made for the illustrations in this No., all of which are taken from his admirable book on Mushrooms. We will therefore call this issue of the Bulletin the ATKINSON NUMBER.

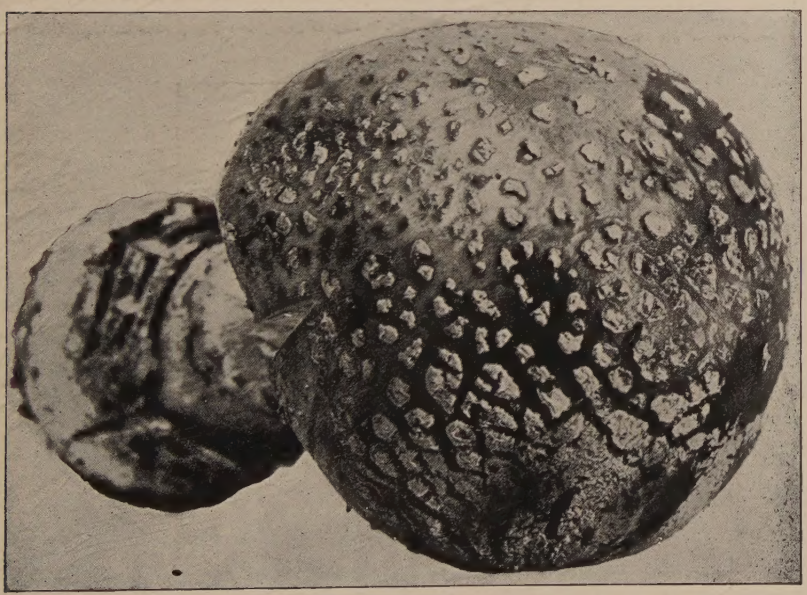


Fig. 51. AM-A-NI'-TA MUS-CA'-RI-A. FLY AG-AR-IC. POISONOUS. Cap yellow or orange; scales on cap and at base of stem white—but these may be yellowish and later they fall off readily. Stem and gills white; a spore-print (evident on colored paper) white. Occurs in Summer and early Autumn. It may be found along roadsides near trees, or in woods. It is a conspicuous plant—the orange or yellow coloring usually brilliant and in strong contrast to the white of stem and gills. The specimens may be five to seven inches high, and the cap three to five inches broad. It is widely distributed in this country and elsewhere in the world. Photo from specimens collected at Ithaca, N. Y. This cut, also Figs. 52 and 53, from Atkinson's Mushrooms.

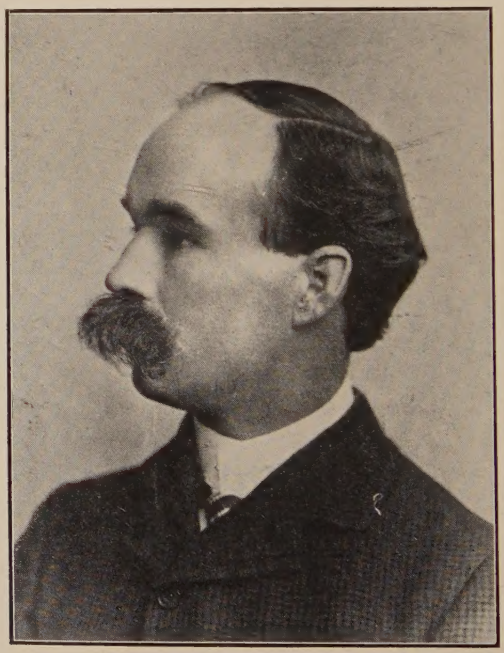
University Bulletin, Series 8, No. 11. Entered as Second Class Matter, Post-office at Columbus, O.

HENRY HOLT & CO. PUBLISHERS.—It has recently been announced that this firm (New York) are now the publishers of Atkinson's Mushrooms. The price is $3.00, (by mail $3.23). This notice is to correct the statement in an early No. of the Bulletin that the author was the publisher.

COLORED ILLUSTRATIONS.—We are convinced that the most valuable representations of Mushrooms are the photographic ones, not the colored plates; of course both are to be desired—but *rely* on the former rather than the latter. Poor ones, whether photos or paintings, ought not to be tolerated —at any rate not used. "Put no trust in color" a great botanist said over a century ago—colors are not always a stable affair, but the minute anatomical characters can be relied on.

AM-A-NÍ-TA.—The Mushrooms of this genus, some of them deadly poisonous, include two or three dozen kinds, with white gills and white spores. They may be positively known by the presence (seen in the early stages of development) of a *vól-va* and a *veil*. The VOL-VA is the sac-like portion or cup below the surface of the soil, out of the top of which the cap and stem push. This is shown in all of our Figures. Look *carefully for it* when getting specimens. It is called in some of the books, *universal veil*—better understood if the plants are seen in the "button" stage. The VEIL, sometimes called the *partial veil*, is very conspicuous in these Mushrooms, shown in the Figures immediately under the cap—in fact it was attached to the cap before the latter expanded; but this structure remains cohering to the stem, ringlike —hence it is called the *án-nu-lus*, or *ring*.

Correction.—According to Professor Morgan, who kindly communicated with me on the subject, Fig. 48, Clavaria pyxidata (Myc. Bull. p. 49) should be changed to *Cla-va'-ri-a cor-o-na'-ta* "Resembling in form the preceeding, but a distinct species." Fig. 49 (p 51) is not Coprinus micaceus, but *Psath-y-rel'-la dis-sem-i-na'-ta*.



Very truly yours
Geo. F. Atkinson

Fig. 52. Am a-ni'-ta mus-ca'-ri-a. Fly Ag'-ar-ic. POISONOUS. Cap orange or yellow: scales, stem and gills, white. See explanation under Fig. 51.

Fig. 53. AM-A-NI'-TA PHAL-LOI'-DES. DEADLY AG-A-RIC. *POISONOUS.* Varies from pure white to yellowish, green, olive or umber. The cap is slimy when moist, convex or bell-shaped and finally expanded as shown in the figure; the margin may be then slightly elevated. The scales are not always present on the cap. The plant usually occurs in or at the border of woods. It may be even larger than the Fly Ag-a-ric. The plant, especially the vol-va, is quite variable. Taken with permission from Atkinson's Mushrooms.

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(TO BE CONTINUED)

The Mycological Bulletin is issued from time to time and sent to all members of the Mycological Club. All eligible to membership who are interested in Nature or the Bulletin. Fee, 10 cents. A few copies of Vol. I remain; price 50 cents each.

Mycological Bulletin No. 15

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, April 15, 1904

ACKNOWLEDGMENT.—To Superintendent M. E. Hard of Chillicothe, and to Dr. H. S. Pepoon of Chicago, we extend thanks for the photos used in making the cuts for this Number. All of the species are common ones and may perhaps be recognized when found. The figure of the Jack-my-Lantern (Fig. 55) will be supplemented in a future No. by a photo of a single specimen natural size—and this very common species then could not be mistaken. This is one that should be learned at once, for attractive as it is, unfortunately it is not an edible species.

AM-A-NI'-TA AGAIN.—The figures given in Bulletin No. 14 are to be most carefully studied. Especial attention was called to the presence of a *vol'-va* (usually conspicuous) and the *an'-nu-lus*—these terms being also there explained. The vol'-va forms a *universal veil* in the young stage, that is. a layer of thin tissue that entirely envelopes the young plant; it is more or less *free* from the cap. When the veil is attached and inseparable, not easily distinguishable, the botanists say it is "concrete" with the pileus.

Fig. 54 HY-PHO-LO'-MA LAC-RY-MA-BUN'-DUM. Cap and stem tawny, light yellowish, or shades of umber; the surface with soft and floccose scales. The flesh is tinged yellowish or brownish, soft and easily broken. Height 2 or 3 inches, cap one or two inches wide. The spores are purple-brown in the HY-PHO-LO-MAS, the gills attached to the stem, rarely or never with a ring, or annulus. Atkinson says the edible qualities of HY-PHO-LO'-MA LAC-RY MA-BUN'-DUM have not been tested. From a photo by Supt. M. E. Hard, Chillicothe, Ohio.

University Bulletin, Series 8, No. 14. Entered as Second Class Matter, Post-office at Columbus, O.

How to Handle These Plants.—The Mushrooms must be secured before too old and the presence or absence of the vol'-va determined; to this end, dig them up carefully with a trowel or strong knife—in fact all the species should be collected in this particular way for close inspection or real study. Have a basket of generous size to carry them home. Tissue paper surrounding the moist or viscid kinds will protect them if handled carefully—but one can only learn by experience how to treat delicate and perishable Mushrooms.

Am-a-ni'-ta a large Genus.—In the Third Volume of the Journal of Mycology (pages 25–33) Professor Morgan describes 28 species which is the approximate number of kinds in our country. Peck enumerates 14 New York species in his 33rd State Report. Lloyd has published a Compilation of the Volvae of the United States in which 38 species are enumerated. Illustrations—colored and half-tones—have been published of many of the kinds; see Atkinson's Mushrooms, McIlvaine's One Thousand American Fungi, Peck's illustrated Reports, &c.

Most Species of Am-a-ni'-ta Deadly Poisonous.—Reasonable care based on proper examination may banish any fear entertained relative to Mushrooms that resemble the Am-a-ni'-tas. The latter are poisonous as is well known—but that should not interfere with an intelligent interest in them and all other fungi too. There are hundreds of palatable and delicious Mushrooms and it is rare that they resemble any species of Am-a-ni'-ta or could be mistaken for one of these poisonous kinds. It is remarkable that the Am-a-ni'-ta called Caesar's Mushroom (the botanical name being *Am-a-ni'-ta cae-sa'-re-a*) is not poisonous but edible; it is a large and beautiful Toadstool, orange or yellow throughout but the vol'-va is white and prominent.

A-man-i-top'-sis.—The Mushrooms so named by the botanists are like Am-a-ni'-ta (that is what the word means) except they never have a ring, or an'-nu-lus. They bear no bad reputation amongst fungus-eaters, and at least a dozen species occur in our country.

Lep-i-o'-ta.—This genus has many common representatives, and though near relatives of Am-a-ni'-ta they are not poisonous—or at any rate only a few are to be let alone. In the Lep-i-o'-tas there is no sac-like vol'-va; but the an'-nu-lus, or ring on the stem, is present. Figure 56 is a representative of this genus.

Comparison of Am-a-ni'-ta, A-man-i-top'-sis, and Lep-i-o'-ta.—These majestic Toadstools will likely be encountered in great numbers during the season, and too close attention can not be given them. With but one or a very few exceptions the species of Am-a-ni'-ta are *deadly poisonous*—therefore do not eat Mushrooms indiscriminately; the tasting and testing should be done with great caution when it pertains to the forms here under consideration. Neither must it be assumed that all the representatives of A-man-i-top'-sis and Lep-i-o'-ta are edible—most of them are but some certainly are not. The fine large Mushroom called Lep-i-o'-ta mor-gan'-i (Professor Morgan discovered this species several years ago and Professor Peck named it) is eaten by some, but it is very inimical to most persons so far as tested. In all the representatives of these three genera the stem is *fleshy* rather than *cartilaginous*, and the gills are usually free, *i. e.* not attached to the stem. The cap is *easily separable from the stem*. The striking differences pertain to vol'-va and ring, or an'-nu-lus, thus:

Volva and ring present.....Am-a-ni'-ta
Volva present, ring wanting.....A-man-i-top'-sis
Volva wanting, ring present.....Lep-i-o'-ta

Fig. 55. CLI-TOC'-Y-BE IL-LU'-DENS. JACK-MY-LANTERN. NOT EDIBLE. Very large, orange yellow; gills phosphorescent when fresh. Photo by Dr. Pepoon, Chicago.

Fig. 56. LEP-I-O'-TA A-MER-I-CA'-NA. AMERICAN LEPIOTA. EDIBLE. Plants 3 to 4½ inches high. The cap is 2½ to 4 inches broad, at first white then reddish or brownish with scales except at center. The white flesh becomes reddish when cut or bruised and the whole plant *turns reddish in drying.* The cap in age becomes sometimes strongly recurved as the two lower specimens show. To be looked for in July and later. The upper figures from photo by Supt. M. E. Hard, Chillicothe: the lower made from specimens collected on a pile of old saw-dust, Columbus.

List of Members of the Mycological Club, 1904, to be resumed in next No.

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Mycological Bulletin No. 16

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio. May 5, 1904

THE ILLUSTRATIONS.—The Bird's-nest Fungus is such a common thing that a figure and name will doubtless be welcomed by many, and accordingly that from the Nina L. Marshall *Mushroom Book* has been used by permission of the publishers. The cut on the third page of this Number supplements Fig. 55 given in Bulletin No. 15. For the figure of Pluteus cervinus, a common edible species, we are indebted to Supt. M. E. Hard. To him, and to all others who have kindly sent photos of Mushrooms thanks are extended.

MY COLUMBUS BOOKSELLER.—It will meet the wishes of many to call attention to the fact that Mr. L. S. Wells, Columbus, Ohio, will promptly supply any of the Mushroom books upon request. He furnishes these at *special rates* to members of the *Mycological Club*. Note was made of this last year and some quotations then given, as, Marshall's Mushroom Book, $3.00, rebate 20 cts.; Atkinson's Mushrooms Edible and Poisonous, $3.00, rebate 40 cts.; McIlvaine's One Thousand American Fungi, $5.00, rebate 20 cts.; in all cases Mr. Wells prepays transportation.

CLI-TOC'-Y-BE IL-LU'-DENS OR JACK-MY-LANTERN.—Some account was given in Bulletin No. 9 (p. 33-4) of this large orange or saffron-colored Gill-Mushroom, so common about old stumps and similar localities, easily recognized by the size, habit of growth, color, absence of annulus, or ring, and the phosphorescence of the gill-portion of the fresh specimens. Fig. 55 (p. 59) showed the species in the natural habitat. The cut which we add, Fig. 58, shows a near view of a single plant fully mature, in fact showing signs of decrepitude, and in such specimens the color is sordid or brownish. Note that the gills are *de-cur'-rent; i. e.* attached to and running down the stem.

Fig. 57. BIRD'S-NEST FUNGUS. This is shown because a common and attractive little thing—not to be thought of in an esculent sense. Two genera are represented abundantly in our flora, *Cy-a'-thus* (the above) and *Cru-cib'-u-lum*, but perhaps only botanists would be concerned in their distinguishing characters. The "eggs" in the nest contain the spores, and the plants are near relatives of the Puff-balls. From the Mushroom Book; Doubleday, Page & Co., publishers.

University Bulletin, Series 8, No. 15. Entered as Second Class Matter, Post-office at Columbus, O.

It is a white spored Agaric—the decurrent gills, absence of volva and annulus, the texture of the stem and cap similar and the former not breaking away readily from the latter, being the characters which are peculiar to the genus Cli-toc'-y-be. From one to two dozen American species have been enumerated. Many of them have not been tested but at present only one species is known to be injurious, and that is precisely the one specially mentioned above and shown in Figs. 55 and 58, namely, the showy Jack-my-Lantern Fungus. This is injurious to most people, and should be *tested with due caution.* Some correspondents claim that people have eaten it with immunity. McIlvaine says "many eat and enjoy it".

PLU'-TE-US CER-VI'-NUS; FAWN-COLORED PLU'-TE-US — This edible Mushroom belongs to the *Rosy-spored* group of Ag'-a-rics. The genus Plu'-te-us has no volva or annulus. The stem is easily separated from the cap—in fact it is almost a regular "ball and socket" joint. The substance of the cap, when the stem thus readily separates, is said to be *"not continuous"* with the stem; were it *"continuous with the stem"* it would be difficult or impossible to make the separation without much injury to the tissue. When PLU'-TE-US CER-VI'-NUS is quite young, or before fully mature and ready to discharge its flesh-colored spores, the gills are white but eventually take on the characteristic pinkish color, and its positive identification is then possible. The cap is grayish brown, or sometimes sooty, but some forms of the plant are entirely white and only the gills show a coloration. It grows on the ground from underground rotten wood, on stumps, logs, etc., and may be found from early Spring to late Autumn.

SPORE-COLOR IN AG'-A-RICS.—Beginners might be reminded that the *Agarics* are the *Gill-Mushrooms*, and that they may be grouped according to the color of the spores. A spore-print (see p. 10) should be made on white paper (but for spores that are probably white, use colored paper); then the Mushroom can, from the color of the spore mass, be placed in one of the following groups: *White-spored, Ochre-spored, Rosy-spored, Brown-spored* or *Black-spored.*

ROSY-SPORED AG'-A-RICS.—This group is not so largely represented in our Mushroom flora as the White-spored section. PLU'-TE-US, shown in Fig. 59, belongs here—this being the first member of this group illustrated so far in the BULLETIN. Some other genera belonging here are CLAU'-DO-PUS, VOL-VA'-RI-A, EN-TO-LO'-MA, CLI-TOP'-I-LUS. In Clau'-do-pus alone is the stem *ec-cen'-tric* (not in the center) or wanting and the pileus lateral; Vol-va'-ri-a has a *vol'-va*; in En-to-lo'-ma the spores are *angular*; in case of Cli-top'-i-lus the gills are *de-cur'-rent.* It is hoped that photos may be obtained of some of these interesting Toadstools for reproduction in the BULLETIN.

MEMBERS OF THE MYCOLOGICAL CLUB, 1904—*Continued.*

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(TO BE CONTINUED)

Fig. 58. CLI-TOC'-Y-BE IL-LU'-DENS. JACK-MY-LANTERN. NOT EDIBLE. The orange or saffron-colored Mushroom described on p. 61 and figured on p. 59 as usually seen growing. This illustration is nearly natural size, but some specimens may be 8 inches high, and the cap 6 inches broad. Its large size, bright yellow color and phosphorescence combine to make it an interesting and attractive species, but as remarked elsewhere, it can not be eaten with impunity. From a photo of a plant collected near Sandusky, Ohio.

Fig. 59. Pluteus cervinus. Fawn-colored Pluteus. Family. Belongs to the Rose-spored section of the Gill-Mushrooms. A common and widely distributed species occurring throughout the season, growing from rotten wood, sometimes on the ground but usually on stumps, logs, etc. The mass of spores is plainly flesh-colored, the pinkish color evident in the gills when they are quite mature—though at first they are white. Usually the plants are grayish or even dark-colored in the woods some specimens of pure white may be found. The absence of volva and annulus, and the ease with which the stem may be twisted out of a socket like cavity of the cap together with color of spores, enables one readily to recognize the species, which is delicious for the table. It is 3 to 6 inches high, the cap 2 to 4 inches broad. From Photo by Supt. M. E. Hard, Chillicothe, Ohio.

A copy of Vol. I bound in cloth may be obtained for 75 cents.

List of Members of the Mycological Club, 1904—See page 62.

The Mycological Bulletin is issued from time to time and sent to all members of the Mycological Club. All eligible to membership who are interested in Nature or the Bulletin. Fee, 10 cents. A few copies of Vol. I remain; price 50 cents each.

Mycological Bulletin No. 17

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, May 28, 1904

THE ILLUSTRATIONS.—We are indebted to the Messrs. Bowen-Merrill Company, publishers of ONE THOUSAND AMERICAN FUNGI, for the four half-tones which embellish the present NUMBER. These illustrate species not be-

Fig 60. CLI-TOC'-Y-BE MON-A-DEL'-PHUS. CLUSTERED CLI-TOC'-Y-BE. FRESH YOUNG PLANTS EDIBLE. This species was named by Professor Morgan in allusion to its cespitose habit—the clusters being dense, and found during autumn on the ground in wet woods. The cap is said to be honey-colored, varying to pallid brownish or reddish. The stem is solid, crooked or twisted, tapering at the base, pallid brownish or flesh color. Gills short de-cur'-rent not crowded, pallid flesh color. Cut from McIlvaine's One Thousand American Fungi, made from a photo by Dr. J. R. Wiest.

University Bulletin. Series 8. No. 16. Entered as Second Class Matter, Post-office at Columbus, O.

fore shown in the Bulletin, and at the same time furnish a fair sample of the figures (not colored) used in that well known book, which has been spoken of by one of our members as a real "Encyclopoedia of American Mushrooms." The numerous colored plates in that work are from studies by the author, Charles McIlvaine.

LEP-I-O'-TA NAU-CI'-NA; SMOOTH LEP-I-O'-TA.—The American plant was named Lep-i-o'-ta nau-ci-noi'-des [*like nau-ci'-na*] by Professor Peck since it differed slightly from the European Lep-i-o'-ta nau-ci'-na, but mycologists generally do not regard it as specifically distinct, hence the use of the first name. It is to be found in the latter part of the summer and autumn, in lawns, pastures, etc. It is entirely white or the cap is sometimes buff, and the gills (which are at first white) become in age dirty pink in color. The plant grows from 2½ to 4½ inches high and the cap may be from 2 to 4 inches broad. The stem is gradually enlarged below, *i. e.* cla'-vate, or club shaped. This species is much like the common Mushroom (*A-gar'-i-cus cam-pes'-tris*) but the gills do not, as in the latter, become *brown* when old. Close inspection will also separate it from poisonous species of *Am-a-ni'-ta*, which have a *vol'-va*; the Lep-i-o'-tas never show this structure.

Fig. 61. PE-ZI'-ZA BA'-DI-A. BROWN PE-ZI'-ZA. EDIBLE. A bay or umber brown plant, growing in clusters, on bare ground, in the grass or where it has been burned over. The disk of the cup is dark brown, externally paler and minutely granular, often with a purplish tinge. The cat is from McIlvaine's One Thousand American Fungi, made from a photo by Mr. C. G. Lloyd, Cincinnati, Ohio.

Fig. 62. LEP-I-O'-TA NAU-CI'-NA. SMOOTH LEP-I-O'-TA. EDIBLE. From McIlvaine's One Thousand American Fungi. See preceding paragraph for notes

Fig 63. LEP-I-O'-TA PRO'-CE-RA. *Parasol Mushroom.* YOUNG PLANTS EDIBLE. This splendid species grows in pastures, by roadsides, in the woods, etc., during summer and early autumn. The cap is greyish brown or reddish brown but the flesh is white. It is oval, then bell shaped, later convex, and then nearly expanded to a plane; there is a marked elevation in the center and this is called the *um'-bo*. The ring on the stem is usually movable. Cut from McIlvaine's One Thousand American Fungi, the photo taken by Dr. J. R. Wiest.

List of Members of the Mycological Club, 1904, to be resumed in next No.

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Mycological Bulletin No. 18

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, June 25, 1904

THE ILLUSTRATIONS.—Although the Mushrooms shown in this NUMBER are not the common edible forms, they are attractive and peculiar, and our interest in them need be none the less because we can not enjoy them as esculents; they are however not inedible and the *Phallus* particularly is considered a delicacy—to be used only of course in the egg stage. But there are other uses for plants even those of low degree and the editor being a schoolmaster will give a little lecture touching one phase of the subject—see next paragraph.

ECONOMY OF NATURE.—A brief paragraph may lend itself to the discussion of the group of Fungi, particularly to the *sap-ro-phyt'-ic* forms as factors in Nature's economy. The common plants—those which possess *chlo'-ro phyll*, as the green coloring matter is called—are independent; they take from the air and soil inorganic matter, convert it with the aid of the light-energy that comes from the sun, into organic material out of which the vegetable fabric and ultimately animal tissue) is built up. But the fungi are *dependent* plants; being destitute of *chlo'-ro-phyll* they rely for their food on living plants or on dead organic matter;—if the former we call them *par'-a sites*, if the latter we say they are *sap'-ro-phytes*. Now all the Mushrooms and the common Bacteria are Saprophytes and their food is the organic matter—mainly dead wood, leaves, dead animal matter, etc. Those Mushrooms that grow out of the soil really use as food not the mineral soil particles, but the

FIG. 64. MY-CE'-NA LEA-I-A'-NA. LEA'S MY-CE'-NA—This deeply salmon-tinted Mycena is one of the most charming little Agarics found in the woods and very common on rotten logs in the vicinity of Columbus. It does not lose all its color in drying, and while it shrivels much the plant is readily recognized in this partially collapsed state. It will be seen mostly in the condition shown at the right, but the deep rich color is displayed to best advantage when the fully expanded form is encountered—the figure at the left exhibiting this interesting phase. Ohio members of the club should know that the specific name was given by the English mycologist Berkeley, and commemorates one of the eminent early botanical collectors, who lived near Cincinnati, Ohio. Photo from specimen collected near Columbus.

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organic matter that is buried beneath the surface. Then it is evident that these plants decompose or reconvert the dead vegetable matter, which, bear in mind, would not of itself change. Logs, stumps, twigs, old leaves, animal substance would remain unchanged forever were not the agents of decomposition at hand, namely, *Bacteria, Mushrooms, Toadstools*, etc. The products of decomposition are the disorganized and disintegrated organic matter: they are, in other words, the chemical elements or the simple compounds handed back to the inorganic world *for use again as food* for plants, and secondarily for animals. The important work the saprophytes have to perform will be appreciated when we remember that the available quantity of plant food is limited and its continued restoration or replenishment is necessary to the continuance of of the higher plants and of course indirectly to the existence of animals even including man.

The genus My-ce'-na.—These plants are mostly small white-spored Agarics. They are very numerous and so are their near relations, thus even the specialist might despair of really knowing all of them. They resemble some of the other genera very strongly and only careful study will result in positive identification. The genus My-ce'-na is closely related to Col-lyb'-i-a, says Atkinson. The plants are usually smaller, many of them being of small size; the cap is usually bell-shaped, rarely umbilicate [that is, with a small abrupt depression at top], but what is a more important character the margin of the cap in the young stage *is straight* as it is applied against the stem and not at first incurved as it is in *Collybia*, when the gills and margin of the pileus lie against the stem. The stem is cartilaginous as in *Collybia* and is usually hollow. The gills are not decurrent or only slightly so by a tooth-like process. Some of the species are apt to be confused with certain species of *Om-pha'-li-a* in which the gills are but slightly decurrent, but in *Omphalia* the pileus is umbilicate in such species, while in *Mycena* it is blunt or umbonate. Some of those which grow on leaves might be mistaken for species of *Ma-ras'-mi-us*, but in the latter the plants are of tough consistency, and when dried will revive again if moistened. In the above manner a specialist states the case but the apparent difficulty should not bring discouragement—an abundance of material will be favorable for repeated study of common forms that are encountered.

The Phal'-loids, or Stink-Horn Fungi.—It has been previously explained that two of the larger and important groups of Fungi are the *As'-co-my-ce'-tae* and the *Ba-sid'-i-o-my-ce'-tae;* the former having spores produced in an enlarged cell, called an *as'-cus*, and the latter bearing the spores on pedicels growing out of an enlarged cell, called a *ba-sid'-i-um*. The species of Pe-zi'-za for example, belong to As'-co-my-ce'-tae; and the Puffballs, Phalloids, and Agarics are members of the group Ba-sid'-i-o-my-ce'-tae.

These microscopic characters might be passed by for the present or for all time, no doubt some beginners and amateurs are inclined to think, yet our knowledge of the multitudes of Fungi will be quite imperfect and our progress in their study much impeded if we do not fully apprehend what is so fundamental in their classification. Then to proceed—The Ba-sid'-i-o-my-ce'-tae includes the two Orders: represented by the Puffballs and the Pha'loids, which the botanists call *Gas'-ter-o-my-ce'-tae;* and the Mushrooms or Agarics and their relatives designated, in botanical language, as the *Hy'-men-o-my-ce' tae.*

It can be seen from the above where our Stink-horn Fungi or Phalloids belong in the Vegetable Kingdom. And to make the matter more emphatic, recur to the fact that the *Gas'-ter-o-my-ce'-tae* have their spore-bearing layer of tissue (which is called the *hy-me'-ni-um*) enclosed by a wall or covering, that is, a *pe-rid'-i-um* which does not rupture before the maturity of the spores. But in case of the *Hy'-men-o-my-ce'-tae*, the spore-bearing layer (*hy-me'-ni-um*) is borne on a free outer surface—as seen in the "gills" in Mushrooms, &c. The "veil" that in some cases covers the spore-bearing portion of the common Mushrooms is a false pe-rid-i-um, "pseudo-peridium," and ruptures before the maturity of the spores.

Ravenel's Phalloid.—This species is rather common, especially about old saw-dust piles and its vile odor easily identifies the Stink-horn. Stages in its developement are shown in fig. 65.

Fig. 65. Dic-ty-oph'-o-ra ra-ve-nel'-i-i. Ravenel's Phal'-loid.—This, like other species of the Stink-horns, is only disgusting in the fully developed stage; the "eggs" are agreeable to the palate. *Caution: Never mistake a poisonous "button" of Am-a-ni'-ta for one of these eggs;* a vertical section will diagnose the specimen. The photographs were made from growing specimens sent from Chillicothe, Ohio, by Supt. M. E. Hard.

FIG. 66. MY-CE'-NA STAN'-NE A. STANNATE MY-CE'-NA.—A delicate species that grows in the woods, occurring in tufts on rotten wood in very damp secluded habitats. The general character is well shown in the illustration, being nearly white in color but many of the pilei are rather smoky or a trifle darkened. The species was described by the botanist Fries many years ago from European specimens. The second or specific name is taken from the Latin, and means *tin*—though I do not know that it is very appropriate to characterize these specimens as staunous in appearance. The halftone was made from a photograph of specimens collected May 30, at Sugar Grove, Ohio.

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Mycological Bulletin No. 19

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, July 15, 1904

ACKNOWLEDGMENT.—We are indebted to Professor L. F. Henderson for the use of the plate from which Fig. 68 is printed. This with other figures appear in a Bulletin (No. 27) of the Idaho Experiment Station, on the food values of fungi. Those interested in that phase of the subject will find in that Bulletin a summary of our knowledge thereto pertaining. In this connection attention might be called to Professor Atkinson's instructive chapters (in Mushrooms Edible and Poisonous) on Selection and Preparation of Mushrooms for the Table; Uses of Mushrooms; Cultivation of Mushrooms; Recipes for Cooking Mushrooms; Chemistry and Toxicology of Mushrooms.

THE GENUS HY-PHO-LO'-MA.—This is included in the section of Brown-spored Agarics, the spores being purple brown. The veil when ruptured clings to the margin of the pileus so that rarely or never is there present, on the stem, a ring or annulus. The genus is closely related to *A-gar'-i-cus* and *Stro-pha'-ri-a*, but in these genera an annulus is present. Several species of *Hy-pho-lo'-ma* are common and they are edible. Four species are illustrated by half-tones and fully described in Atkinson's Mushrooms. McIlvaine

FIG. 67.—MA-RAS'-MI-US RO'-TU-LA. This beautiful little Ma-ras'-mi-us grows on sticks and leaves and seems to be a common species in our woods. The pileus is one-half inch or less in breadth, and white or whitish in color. The stem or stipe is whitish above. Morgan describes the species as follows: Pileus membranaceous, a little convex, umbilicate, plicate; stipe horny, hollow, shining, glabrous, blackish; lamellæ few, broad, distant, joined behind to a free collar, whitish. The cut above was made from a photograph of specimens collected in a woods near Columbus.

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includes 14 species in One Thousand American Fungi, one species illustrated by a half-tone plate, and three species shown in a colored plate. We have shown, in the Mycological Bulletin, *Hy-pho-lo'-ma sub-lat-er-i'-ti-um* on page 25, and *Hy-pho-lo'-ma lac-ry-ma-bun'-dum* on page 57.

Ravenel's Phal-loid.—On page 71 a figure was given of *Dic-ty-oph'-o ra ra-ve-nel'-i-i*, or in simple language, Ravenel's Phalloid; but space was wanting for an account of the specimens from which the photograph was made and reference to the interesting characters of this fungus. The fresh "eggs" — such as shown in the left figure above — were sent in quantity by Supt. M. E. Hard, of Chillicothe, and keeping them moist in Sphagnum, the development took place with considerable rapidity, as indicated in the successively developed forms in the plate on page 71. The thick *volva* ruptures at the apex with one or two wide clefts and the central column then elongates rapidly. The cap-shaped or bell-shaped pileus is covered with the spore bearing layer which is called the *gle'-ba*.

In Ravenel's Phalloid the surface of the pileus is merely granular or minutely wrinkled after the gleba melts away, but in other species there is a conspicuous reticulation of ridges and crests, remotely suggestive of the pitted cap of a Morel. The plant presented in longitudinal section shows that the stem is hollow, and this cavity extends quite to the apex, the perforation being conspicuous from above where it is surrounded by a broad light-colored circular lip. The pitted or spongy character of the tissue of the stem can be determined from the figure. It can be seen also that the cap or pileus is attached only near its apex. Beneath the cap is a *veil* — characteristic of this genus.

Botanists include the Phal-loids and their near relatives in the group called *Phal-lin-e'-ae*, of which about 50 species have been described. Most of the forms are found in the Tropics — especially in Australia; about 10 species are reported for North America.

The group contains the two orders, *Clath-ra'-ce-ae* and *Phal-la'-ce-ae*; the latter includes the Phal'-loids or Stink-horns and they are enumerated under 7 different genera. The species most likely to be encountered are members of the genus *Dic-ty-oph'-o-ra* (as shown in Fig. 65, alluded to in the account above) and *Ith-y-phal'-lus*. The unbearably vile-smelling Stinkhorn, common in our region, is *Ith-y-phal'-lus im-pu'-di-cus*.

The Ivory Hy-groph'-o-rus.—This species, which we illustrate on the opposite page, is common in pine woods in Idaho according to the interesting account by Professor L. F. Henderson. He says that it occurs in immense quantities—tons upon tons could be collected in the wooded hills of Idaho from September to December—and although coated with a slimy covering, causing it often to slip from the hands like an eel, when cleaned nicely and cooked into a stew makes a delicate dish of oyster flavor — having a decidedly vegetable rather than meat flavor. The plants are from one to four inches wide and three to six inches high. The entire plant is white and the gills are decurrent. The pileus is rather thick, generally flat or convex, though in age it may become tilted upwards; it is always incurved along the edge when young.

Professor Henderson says many other species of this interesting genus are to be found abundantly in fir woods, or in forests of mingled pine and fir, but he has reserved the discussion of these for his future Bulletins. It is supposed that all of the species are edible; they present various shades of colors from white, yellowish-white, yellow, yellowish-red, to dull brownish or dirty olive. He says, besides, that they all agree in the following important generic characters:

The gills are rather distant, of a waxy consistency, broadening towards their attachment to the cap; and the central portion of the gill, called the *tra'-ma*, is but a continuation of the material of the pileus, so that when they are pulled off from the cap they each leave a projecting line of the trama behind them on the cap.

This genus is closely related to *Can-tha-rel'-lus*, but in the latter the gills are blunt and forked.

FIG. 68.— HY-GROPH'-O-RUS E-BUR'-NE-US.— IVORY HY-GROPH'-O-RUS.—Edible. The half-tone is kindly furnished by Professor Henderson, who first used it to illustrate a Bulletin (No. 27) published by the Idaho Experiment Station, and referred to in the first paragraph of this number of the Mycological Bulletin. The specimens were collected at Moscow, Idaho.

FIG. 69. -PA'-NUS AN-GUS-TA'-TUS.—NARROW PA'-NUS. This is a fleshy-coriaceous fungus more or less spatulate or flabelliform. It is minutely hairy and of a dirty white or yellowish color. The stem is very short or altogether absent. The gills are very numerous and crowded; they are decurrent. The species is common in the woods. Morgan says this and *P. dealbatus* are two fine new species first discovered by Mr. Lea. It was described and named by Berkeley, a pioneer English mycologist. The cut was made from a photograph of specimens collected on a rotten log near Columbus.

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Mycological Bulletin No. 20

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, August 25, 1904

BACK NUMBERS OF THE BULLETIN.—Single odd Nos. will be furnished gratis to subscribers when needed to complete sets, *but No. 2 is entirely exhausted.* Will all those who have an extra copy of this *No.* kindly return same to the Editor who then can accommodate others. Unfortunately only a *very few* complete sets of Vol. I are left but the price will remain as before noted, namely, 50 cents; for bound copies, 75 cents.

ACKNOWLEDGEMENT.—We take pleasure in thanking Dr. Wm. Trelease for the use of the beautiful cut of Lepiota on the last page of this *No.*, originally published in the Annual Report of the Missouri Botanical Garden. Another from the same source will follow.

DESCRIPTIONS.—At the risk of seeming technical, suggestions and directions are given on the inside pages of this *No.* for critical study of *Mushrooms.* Really very many ought to lay hold of this matter seriously, ergo profitably, —particularly teachers of Nature Study and of Botany. The two pages will be reprinted on a single narrow leaf for convenience of the strenuous. Additional suggestions to appear on page 81.

Fig 70. CLI-TOC'-Y-BE IN-FUN-DIB-U-LI-FOR'-MIS. FUNNEL CLI-TOC'-Y-BE. A neat little toadstool collected in woods near Sandusky, Ohio.

University Bulletin, Series 8. No. 30. Entered as Second Class Matter, Post-office at Columbus, O.

FIELD STUDY OF MUSHROOMS

(AGARICACEAE)

USE THE BLANK ON REVERSE SIDE

Field study is necessary in case of *Mushrooms with soft fleshy texture.* They cannot be prepared for the herbarium in any way that will fully retain the characters of the fresh plant. But dried specimens are not useless—prepared with care they serve to interpret the descriptions that are drawn up from the fresh specimens.

Abundant specimens should be dried quickly by fire-heat in a wire rack placed over a stove or lamp. They should then be stored in pasteboard boxes—not moistened and pressed flat as is sometimes advised.

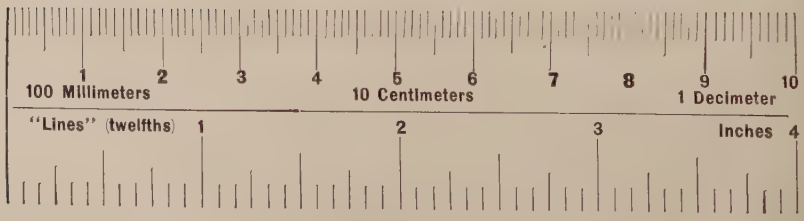
To kill larvae or infesting insects: Put the specimens in a small box with tight-fitting lid and with them place a little Carbon Bisulphide (in a small dish, or saturate a wad of cotton); this volatile substance will prove effectual in an hour or in several hours if specimens are large. The vapor of the Carbon Bisulphide is *highly inflammable*—do not use it at night or near a stove. It is well to keep moth balls in the boxes with the specimens.

The blank on the reverse side and the ideas above are compiled for the most part from Prof. Earle's article in Torreya. He also adds the pertinent suggestion that the discriptions be supplemented by photographs and water-color sketches.

It is scarcely necessary to add that an ample quantity of complete specimens should be at hand when making out the descriptions; the plants should be *dug* up or a portion of the *matrix* removed—never broken off and leaving the basal part. All stages in development should be illustrated. Particularly the change of colors should be noted. Gills, for example, as well as spores when immature may be pure white, but take on a characteristic color with age. It is suggested that Prang's nomenclature of colors be used. ("The Prang Standard of Color," Popular Edition, No. 1, One Dollar; Louis Prang, Boston, Mass.)

For package of these descriptive blanks, send five cents to

W. A. KELLERMAN, Columbus, Ohio



No. _____

Name _____

Habitat _____

Locality _____

Date _____

Collector _____

PILEUS

Width _____

Shape _____

Color _____

Surface _____

Margin _____

GILLS

Attachment _____

Number _____

Shape _____

Color _____

Spores _____

Veil _____

Annulus _____

STEM

Length and Thickness _____

Shape _____

Surface _____

Color _____

Substance _____

Volva _____

FLESH

Color _____

Changes _____

Consistency (incl. Juice) _____

Taste _____

Odor _____

NOTES:

Described by _____

FIG 71. LEP-I-O'-TA NAU-CI'-NA. SMOOTH LEP-I-O'-TA. EDIBLE. Taken from the Annual Report of the Missouri Botanical Garden, by permission of Dr. Wm Trelease. Further explanation in next Number.

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Mycological Bulletin No. 21

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, Sept. 5, 1904

THE ILLUSTRATIONS.—Fungi to be found by everybody are shown in this No. and while we have to bear the responsibility of three illustrations, it is to the kindness of Dr. Wm. Trelease that the beautiful cut of Lepiota, Fig. 73, is given on page 82. This is supplementary to Fig. 71 which was published on page 80.

EXPLANATIONS OF THE DESCRIPTIVE BLANK.—Recurring to the blank for descriptions of Mushrooms published in the previous NUMBER for those who wish to study somewhat carefully the Gill-fungi, it has seemed best to suggest a few points that may aid beginners.

First, it is suggested that *all* specimens be *serially* numbered whether they are thoroughly studied, described or figured, or merely collected and sent away for name and comment. Never repeat a number—there is no objection or inconvenience even if the series runs up to hundreds.

The *habitat* is quite important—meaning the place in which the specimen is found or usually grows—as in fields, open woods, thick shady woods, on soil, on stumps, logs, etc.

The *pileus* can be easily described in brief, plain language, as to size, shape and color; the shape is commonly *convex* like the Common Mushroom, but the convexity may be greater when it would be *campanulate* (bell shape), or it may become expanded or *plane* (flattened) as it approaches maturity. If it has a sharp, deep depression (as in Fig. 70) it is said to be *in-fun-dib'-u-li-form;* a slight depression is indicated by the word *um-bil'-i-cate;* if it has a boss or knob (*umbo*) in the centre it is described as *um'-bo-nate.* The pileus may be smooth, scaly, striate, moist, viscid (sticky), water-soaked, etc.; its margin may be straight as applied to the stem or *incurved.*

Fig. 72. TRE-MEL'-LA AL'-BI-DA. WHITE TRE-MEL'-LA. EDIBLE. This belongs to the group of *Trembling fungi*, having a gelatinous consistency, when fresh having a soft clammy touch and yielding like a mass of gelatine. The botanists put them in the group of Ba-sid-i-o-my-ce'-tae to which all the Gill fungi and many others belong. This species is common on rotton wood in moist shady places. The specimens were collected near Sandusky, Ohio.

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The *Gills* can not be characterized off-hand so readily and certain technical terms are indispensable. For example, they are said to be broad, narrow, lanceolate, triangular, etc., according to their shape when viewed from the side,—*i. e.*, when the pileus is cut in halves showing the gill in full width and length. The ends of the gills next to the stem are to be especially noted; they are said to be *adnate* when set squarely to the stem and attached; if they run down on the stem they are *decurrent;* but if they are rounded and not attached to the stem they are said to be *free.* In some cases they have a notch or curve at the posterior end (end next to stem), when they are described as *emarginate* or *sinuate.*

The *spores* should always be described as to color seen in mass—the spore print settles this; or a pocket lens or a low power of the microscope can be used to advantage. When a high power is availabie (say a ¼ or a ⅛) the shape and size of the spores should be recorded.

Doubtless the above suggestions will be ample to guide the beginner who wishes to try his hand on the descriptive blank, which was given in the previous NUMBER. If some question then still persists in the mind, the party is requested to speak out.

Fig. 73. LEP-I-O'-TA NAU-CI'-NA. SMOOTH LEP-I-O'-TA. EDIBLE. This illustration shows a mature specimen of the same Mushroom given under Fig. 71, p. 80. As has been stated elsewhere, the genus *Lepiota* is closely related to *Amanita* but differs from it in not having a *volva.* Careful inspection relative to this point should always be made. The Smooth Lepiota grows in lawns, in pastures, by roadsides, etc. At this season of the year it is quite abundant. It is white or the cap may be buff, and in age the gills become dirty pink in color. Our figure is reproduced from the Annual Report of the Missouri Botanical Garden by permission of Director Wm. Trelease.

Fig. 74. ITH-Y-PHAL'-LUS IM-PU'-DI-CUS. STINKHORN. This is a common *Phal'-loid* at once known by its peculiar shape and vile odor about which comments may be reserved for the future. The photograph was made from a specimen collected near Sandusky, Ohio, by Professor F. L. Landacre.

Fig. 75. AM-A-NI'-TA RU-BES'-CENS. REDDISH AM-A-NI'-TA. Of these species Professor Atkinson says: "Edible *but use great caution.* It is so-called because of the sordid reddish color diffused over the entire plant, and especially because bruised portions quickly turn to a reddish color." The specimen from which the photograph was taken, was collected in open woods, Johnson's Island, Sandusky, Ohio, by H H. York.

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Mycological Bulletin No. 22

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, Oct. 20, 1904

A NEW PROPOSITION.—The publication of the BULLETIN has been satisfactory *so far*, yet it is the opinion of some (including the editor) that more frequent issues would be very desirable. Therefore a tentative proposition is made, namely, to print the MYCOLOGICAL BULLETIN in 1905 as a *semi-monthly* periodical—the total number of pages, illustrations, etc., would in that manner be doubled. For this there would be charged 25 cents a year. I thank those very sincerely who have voluntarily paid more than the regular subscription price of 10 cents; only one half of the cash expense (I may say it privately) has been met by the total receipts. This statement is made simply to justify the charge of 25 cents—in case the Bulletin is enlarged as suggested. If those, who consider this an unfortunate and undesirable step, will kindly

Fig. 76. HEL-VEL'-LA LA-CU-NO'-SA. GROOVED HEL-VEL'-LA. Attractive white plants with irregular caps — near relatives of the Morchellas, or Morels; like the latter they are edible. The deep longitudinal grooves in the stem are characteristic for this species. The specimens from which the halftone was made were collected in moist woods near Sandusky, Ohio.

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protest *at once*, I will know better what course to pursue. If no objection comes and your subscription is *not ordered discontinued*, I will take it that you wish your name continued on the mailing list at the new price.

WHAT MAY THEN BE DONE IN THE FUTURE.—In case the proposed increase in size of the annual volume of the BULLETIN obtains, more illustrations made from photos sent in by subscribers will be published, and this opportunity is taken to urge that abundant photos be sent. The commonest mushrooms and all conspicuous fungi are the very ones most desirable for this purpose. The BULLETIN will continue to be a Leaflet for *beginners* and *amateurs*—students too might perhaps use it to their advantage, and teachers of Botany and those carrying on Nature Study in the schools likewise may find it interesting and profitable. The increased size would not only afford opportunity to double the number of illustrations, but also allow fuller and perhaps more systematic explanations of matters mycological and mycophagical. Many descriptive terms that are technical and difficult—but their use as advantageous as unavoidable—could be explained if more space is available. But I desist—for I have already betrayed too strong *inclination to enlarge the* BULLETIN!

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Fig. 77. DI-DYM'-I-UM- SQUA-MU-LO'-SUM. A SLIME MOULD. The Slime Moulds while they are feeding and growing, creep about over decaying vegetation in sheltered places. The slime or jelly-like substance of which they are composed may be yellowish, or occasionally of a deep yellow or bright red color. Finally the soft matter (protoplasm) shapes itself into little bodies as shown in the illustration; other species of course have different forms. The *spores* are formed within the globous receptacles—and were not this reproductive stage in some respects like that of plants, these organisms would unhesitatingly be excluded from the vegetable kingdom. Other species will be shown in the future, and more can be said in regard to these peculiar 'plants.' The above specimens were collected on Cedar Point, near Sandusky, Ohio.

Fig. 78. MA-RAS'-MI-US CAN'-DI-DUS. WHITE MA-RAS'-MI-US. This delicate species grows in moist, sheltered, shady places in woods—its habitat and structure fully illustrated in the half tone presented. The specimens were collected near Sandusky, Ohio, by H. H. York and C. J. Carter.

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Mycological Bulletin No. 23

W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, Nov. 20, 1904

ANNOUNCEMENT.—It has been definitely decided that during 1905 the MYCOLOGICAL BULLETIN will be issued as a Semi-monthly. It will retain its present form, style and character, but the frequency of the issues will be

Fig. 79. A-MAN-I-TOP'-SIS VAG-I-NA'-TA. SHEATHED A-MAN-I-TOP'-SIS. EDIBLE. A common plant in woods being gray or mouse-colored; some forms are said to be brownish or fulvous. The cut shows the conspicuous cylindrical volva and the deep striae or ridges of the pileus. The plant is brittle and fragile. It is a near relative of the genus *Am-a-ni'-ta*, but from the latter *A-man-i-top'-sis* is separated by the *absence of an annulus*. The photo was made from a specimen collected by H. H. York, on Johnson's Island, Sandusky, Ohio, July 20, 1904

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doubled: the total number of pages, cuts, &c. will be twice as many as printed during 1904. The price will be 25c. per annum.

Subscribers are asked to forward the 25 cents at an early convenience; an especial request is made that if in any case it is desired that a name be removed from the mailing list, the person will kindly notify me at once.

PHOTOGRAPHS SOLICITED.—It will be a pleasure to reproduce photos of fungi that subscribers may send for the purpose—and we will not confine our-

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selves strictly to the conspicuous Mushrooms, many of which have been generously illustrated in the good books; but—following the recent suggestion of a subscriber—it is hoped that many of the common smaller forms, interesting fungi of various groups, may find place on the pages of the Semi-monthly leaflet during the year

THE GENUS A-MAN-I-TOP'-SIS.—Some comment has already been made on this genus of white-spored Agarics on a previous page, and especial attention called to the characters that separate *Am-a-ni'-ta*, *A-man-i-top'-sis*, and *Lep-i-o'-ta*—all of which contain many common and conspicuous Mushrooms. On the first page of this No. is shown a common species of *A man-i-top'-sis* that is edible. The volva can be seen, and its affinity to *Am-a-ni'-ta* is thereby indicated; but no annulus is present. In *Lep-i-o'-ta* a ring is present and a volva is wanting. As mentioned before, the cap in all these is easily separable from the stem. By some mycologists *A-man-i-top'-sis* is considered but a subgenus of *Am-a-ni'-ta*, since it differs from that genus only in having no veil. There are about ten American species. Atkinson describes and figures three of the species. McIlvaine mentions ten species and gives colored figures of three of them. None of the species are known to be poisonous. The word *A-man-i top'-sis* means *like Am-a-ni'-ta*.

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Fig. 80. HY-PHO-LO'-MA CAP-NOI'-DES GRAY-GILL HY-PHO-LO'-MA. Cut from the Idaho Experiment Station Bulletin, No. 27, by L. F. Henderson. This, Prof. Henderson says, is a fine Mushroom, good raw or cooked. MacIlvaine says there is no better Hypholoma. This species has been reported from New York to California.

The Mycological Bulletin will be issued in 1905 as a Semi-monthly; price 25 cents.

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W. A. Kellerman, Ph. D., Ohio State University

Columbus, Ohio, Dec. 24, 1904

END OF SECOND VOLUME.— It is most gratifying to close the second volume of the BULLETIN with even greater interest than was manifested a year ago. This is all the encouragement needed to continue the publication of the Leaflet. Better paper has been used, and I am hoping for possibly better halftones also the coming year. All camera fiends will now see their opportunity! It was only after much hesitation that the price was increased to 25 cents, but I may be excused for this expansion which had, of course, to go along with increase of pages and cuts. When the BULLETIN arrives at the "paying basis" there will be another expansion — but the *price will not* be increased again for 99 years.

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THE GENUS HY-PHO-LO'-MA—This includes several common and interesting fungi with dark brown or purple brown spores. The Greek words from which the word Hy-pho-lo'ma is derived, means *web* and *fringe*; the veil is web-like and adheres to the margin of the pileus. There is therefore no ring or an'-nu-lus. The gills are attached to the stem. The stem is said to be continuous with the substance of the cap; that means, it is not easily separated from it. In Atkinson's Mushrooms Edible and Poisonous there are several beautiful illustrations of some of the species. The cut of Hy-pho-lo'-ma capnoi'-des on the last page of this No. was kindly loaned by Prof. Henderson of the Idaho Experiment Station.

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